

Remarks

Applicant hereby responds to the Office Action mailed December 17, 2004.

Applicant is simultaneously filing an Information Disclosure Statement, for a PCT Search Report that has been received. Applicant requests that the IDS be considered by the Examiner. Applicant respectfully traverses the rejection of claims 1-13 and 17-23 under Section 103 as being unpatentable over Cumming et al. ("Cumming") in view of Sturdevant.

The cited references do not show a slack adjuster with a low friction ring engaging the worm gear and the body and supporting the worm gear for rotation in the chamber in the body.

Applicant submits that it would not be obvious to combine the references as proposed in the Office Action to provide this structure, for the following reasons.

The Sturdevant patent relates to a torque wrench for tightening a nut. There is no indication in Sturdevant that its structure or mode of operation are desirable or even suitable for use in other types of products--much less in as specific a product as a slack adjuster for a vehicle braking system. There are many, many, types of products that use worm gears; it is not reasonable to think that every piece of technology in any one such product is automatically suggested for use in all other such products.

The references do not recognize the problem that is addressed by the present invention--for example, Cumming does not discuss a need for friction reduction. The references do not attempt to solve the problem that is addressed by the present invention. Therefore, is no motivation in the references for applying the feature of Sturdevant to the structure of Cumming. Further, it is improper to use applicant's own disclosure as a "blueprint" to pick and choose references and combine portions of them to come up with applicant's claimed structure.

The Office Action suggests two specific motivations for the combination, with which applicant respectfully disagrees.

The Office Action first suggests as a motivation that it would have been obvious to "use bearings to support the worm gear as taught by Sturdevant in the slack adjuster of Cumming in order to reduce the number of elements for support thus reducing costs (reduction of materials, time to assembly)."

Applicant submits that bearings are not normally used for this purpose, but rather are used for friction reduction purposes. There is no discussion in Cumming et al. of a need for friction reduction. Also, reducing the number of parts in a device does not necessarily reduce costs. It is even possible that replacing a seal ring, thrust washer, and snap ring, with a bearing, might actually increase cost. The present application does not suggest that there is an initial reduction in cost for the product; rather, it suggests a longer term benefit--one that is not discussed at all in either reference.

The Office Action secondly states as a motivation, "The use of bushings also allows for greater brake force since the worm gear is not as likely to bind". If this is true, it is taught in applicant's own disclosure, and not in the references. There is no discussion in Cumming et al. of a need or desire to reduce binding in a slack adjuster. Just because a combination has benefits does not mean that the combination is obvious. Thus, this motivation is improper.

As noted in the specification of this application, tests results on the invention show a 400% improvement in product life, from 40,000 cycles to 200,000 cycles. Such good test results come up consistently. This improvement in product life makes the product more viable commercially. Thus, the invention is not only new but also directly advantageous. These are hallmarks of non-obviousness.

Also as noted in the specification, the invention makes it feasible to remanufacture slack adjusters at relatively low cost by replacing friction rings only. Currently, worn slack adjusters are discarded throughout the industry. Remanufacturing is not currently done in the market today, and there is no suggestion commercially or in the references of the feasibility of such an operation. The invention makes this practical.

On the basis of the foregoing remarks, Applicant requests allowance of this application.

Respectfully submitted,

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